Ultralink® UltraVue™

High Definition Multimedia Interface Cable

Technical White Paper

ULTRALINK® UltraVue™ High Speed HDMI® cables overcome the drawbacks of high frequency audio/video signal attenuation and extended length requirements of conventional HDMI cables with low capacitance, extremely low attenuation rate and high transmission stability and reliability.

The limitations in structure and the materials of conventional twisted-pair HDMI designs cause the following problems:

1.) For long distance applications the capacitance in twisted-pair designs increases with length (as does external noise interference), thus affecting high frequency audio and video signal transmission stability.

2.) Twisting two transmission wires around each other forms the typical HDMI cable. Twisted-pair eliminates cable cross-talk and enhances the tensile strength of the cable. However, twisted-pair configurations relatively extends the signal transmission path and complicates keeping individual wires at an equal length, thereby increasing signal attenuation rate and affecting signal transmission stability.

3.) Before bonding the twisted-pairs to their respective HDMI connector pins, the wires must be untwisted and straightened out complicating the installation process and cost. Therefore it is desirable to provide a digital audio/video cable that facilitates installation, avoids signal interference, and exhibits a low signal attenuation rate and high transmission stability.

The UltraVue™ High Speed HDMI® Cable Construction

UltraVue™ High Speed HDMI® cables features low-capacitance, interference-free, stretch-prevention and high tensile strength making it practical for long-distance applications including:

1.) An electrical strand formed of multiple high-frequency and low-frequency transmission wires plus low-capacitance fillers.

2.) Quad-Shielding for superior rejection against EMI and RFI noise with a metallic foil shield surrounding the electrical strand, a braided shield surrounding the metallic foil shield, and a c(UL) Listed, CL3/FT4 Rated, flame retardant PVC outer jacket surrounding the braided shield.

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3.) Each high-frequency transmission line includes multiple high-frequency transmission wires that are equal in length and arranged in parallel.

4.) Skin-Foam-Skin Nitrogen-Injected dielectric insulation surrounding the high-frequency transmission wires. In Skin-Foam-Skin technology, the first skin of high density PE insulates the inner conductor; the Nitrogen-Injected PE expanded section gives way for the electromagnetic signal to quickly spread out, and subsequently the second skin seals the insulation. This provides for much better centering of the conductor, better electrical properties, and more stable impedance.

5.) Two shielding layers surrounding the insulation layer, and a ground wire set between the two shielding layers in a middle position relative to the high-frequency transmission wires.

6.) Each of the high-frequency transmission wires of each high-frequency transmission line is silver-coated, copper-clad steel wire with high tensile strength and high transmission speed. To avoid changes in the cross-sectional area of the high-frequency transmission wires when stretched accidentally by an external force, the high-frequency transmission wires can be formed of a copper covered steel wire for the advantages of high tensile strength and flexible mechanical properties.

7.) The grounding wires and the low-frequency transmission wires are made from high purity oxygen-free, tinned copper. Further, the insulation layer is prepared from TPE (thermoplastic elastomer).

8.) The high density braided shield is comprised of tinned oxygen-free copper wires surrounding the metallic aluminum Mylar™ foil shield.

UltraVue™ High Speed HDMI® cables are comprised of four high-frequency transmission lines instead of the standard two, and each high-frequency transmission line is comprised of two equal-length high-frequency transmission wires arranged in parallel, an insulation layer surrounding the high-frequency transmission wires, two shielding layers that surround the insulation layer, and a grounding wire set between the two shielding layers in a middle position relative to the high-frequency transmission wires.

UltraVue™ High Speed HDMI® cables have advantages of low capacitance, low signal attenuation rate, high signal transmission stability and reliability, plus, they are practical for long distance applications (over 25 meters – 82 feet) with no rise in capacitance value.

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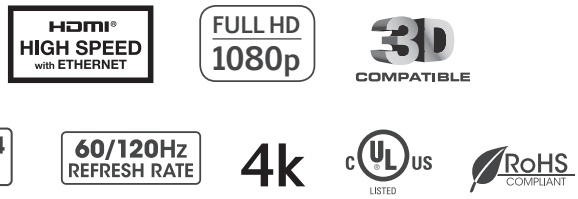
Advantages and Benefits of UltraVue™ High Speed HDMI® Cables

1.) Each high-frequency transmission line of the digital audio/video HDMI cable has two equal lengths, parallel high-frequency transmission wires facilitating installation, saving material costs and minimizing the signal transmission path.

2.) The high-frequency transmission wires in each high-frequency transmission line are formed from a copper-clad steel wire for high tensile strength and flexible mechanical properties. Therefore stretching the high-frequency transmission lines accidentally by an external force does not cause the high-frequency transmission wires to change their cross-sectional area, assuring low signal attenuation rate and high signal transmission stability and reliability.

3.) In long-length applications (20 meters – 65 ft. or more) the internal shielding layers of each high-frequency transmission line that surround the high-frequency transmission wires and grounding wire provide an excellent shielding effect against electromagnetic interference (EMI) without causing any rise in capacitance. Furthermore, the metallic foil shield, the braided shield and the outer plastic jacket enhance the shielding effect, assuring high signal transmission stability and reliability at all times.



California, U.S.A.:

ULTRALINK/XLO PRODUCTS, INC. 1951 South Lynx Avenue, Ontario, CA 91761
Tel: (909) 947-6960 • Fax: (909) 947-6970 • E-Mail: usasales@ultralinkproducts.com

Toronto, Canada:

ULTRALINK PRODUCTS, INC. 231 Bentley Street, Markham, ON L3R 3L1
Tel: (905) 479-2831 • Fax: (905) 479-9347 • E-Mail: cdnsales@ultralinkproducts.com

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